

Middle-Latitude Cyclones

You've learned that much of the day-to-day weather in the United States is caused by middle-latitude cyclones. In this lab, you will identify some of the atmospheric conditions associated with a middle-latitude cyclone. Then you will use what you know about Earth's atmosphere and weather to predict how the movement of the low-pressure system affects weather in the area.

Problem How do middle-latitude cyclones affect weather patterns?

Materials

- colored pencils
- Resource 22 in the DataBank

Skills Observing, Comparing and Contrasting, Predicting

Procedure

1. Use the colored pencils to color the cold air, cool air, and warm air areas on the map in Figure 1. Also color the symbols used to designate the fronts.
2. Identify and label the cold front, warm front, and occluded front on the map in Figure 1.
3. Draw arrows that show the direction of surface winds at points A, C, E, F, and G.

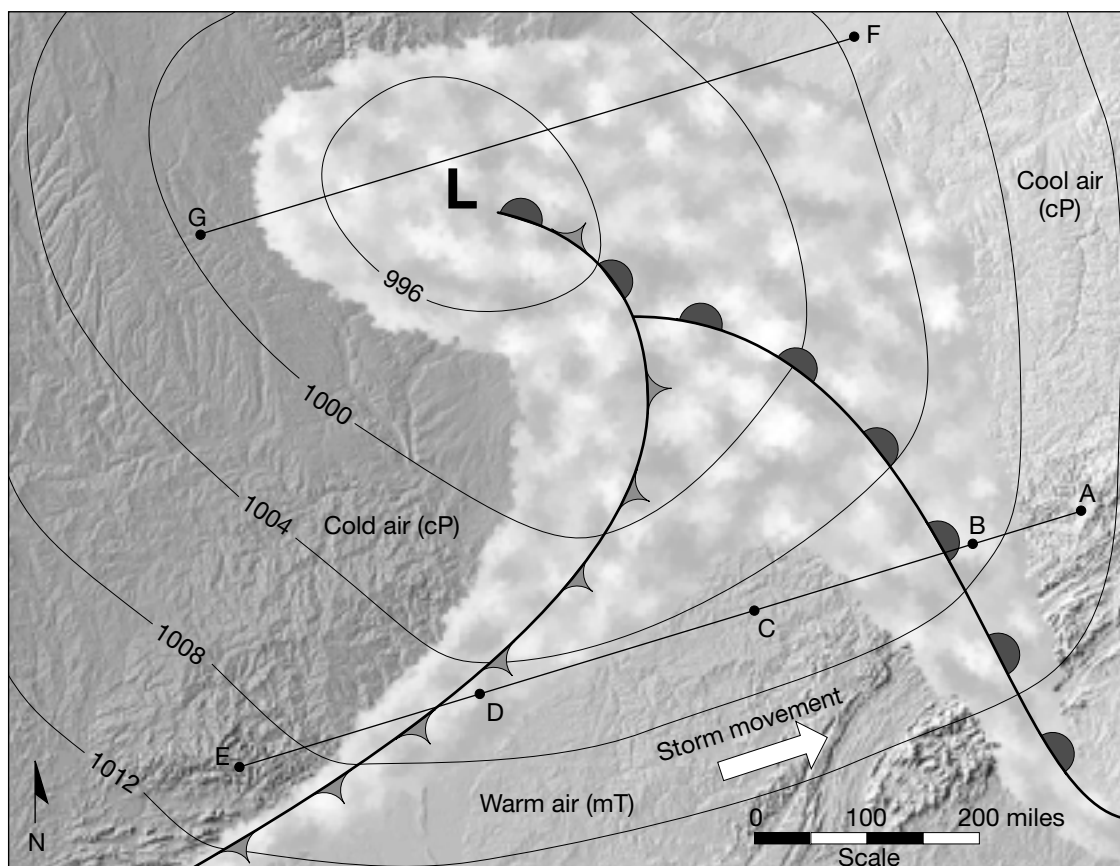


Figure 1

Analyze and Conclude

1. **Describing** In which direction are the surface winds moving?

2. **Identifying** At which stage of formation is the cyclone? Explain your answer. Refer to the map on Resource 22 in the DataBank if necessary.

3. **Explaining** Is the air in the center of the cyclone rising or falling? What effect does this have on the potential for condensation and precipitation?

4. **Inferring** Find the center of the low, which is marked with the letter *L*. What type of front has formed here? What happens to the maritime tropical air in this type of front?

5. **Predicting** Once the warm front passes, in which direction will the wind at point B blow?

6. **Synthesizing** Describe the changes in wind direction and moisture in the air that will likely occur at point D after the cold front passes.

7. **Synthesizing** Describe the wind directions, humidity, and precipitation expected for a city as the cyclone moves and the city's relative position changes from point A to point B, point C, point D, and finally from point D to point E.
